Abstract of the disclosure:

An aluminum nitride sintered body produced by sintering under pressure of a powder composition comprising aluminum nitride and 5 to 30 % by weight of at least one sintering aid selected from the group consisting of Nd, Sm, Eu, Er, Dy, Gd, Pr and Yb, per 100 % by weight of the powders of aluminum nitride and the sintering aid, wherein the amount of the sintering aid is a conversion value as oxides of the elements, the sintering body that has been subjected to mirror-polishing having a surface roughness R max of 0.2 μm or less and a thermal conductivity of 200 (W/mK) or more.